

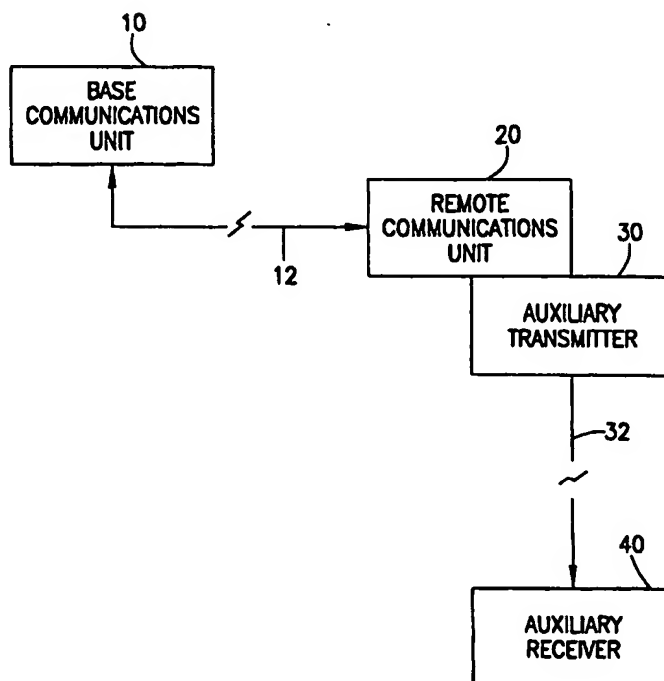
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<b>(21) International Application Number:</b> PCT/US99/26641 <b>(22) International Filing Date:</b> 12 November 1999 (12.11.99) <b>(30) Priority Data:</b> 09/201,525 30 November 1998 (30.11.98) US <b>(71) Applicant:</b> BITTACHON HOLDING, INC. [US/US]; 6th floor, 2777 Summer Street, Stamford, CT 06905-4333 (US). <b>(72) Inventors:</b> DEAK, R., Leslie; Bittachon Holding, Inc., 6th floor, 2777 Summer Street, Stamford, CT 06905-4333 (US). DEAK, Lindsay; 45 Cushman Road, Scarsdale, NY 10583 (US). <b>(74) Agents:</b> WEISBURD, Steven, I. et al.; Ostrolenk, Faber, Gerb & Soffen, LLP, 7th floor, 1180 Avenue of the Americas, New York, NY 10036-8403 (US).		<b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>

**(54) Title:** REMOTE ALERTING DEVICE FOR INCOMING RADIO COMMUNICATIONS**(57) Abstract**

A communication device includes a base communication unit (10); a portable communication unit (20) operable to receive a message from the base communication unit via a first radio frequency communication channel (12); an auxiliary transmitter (30) coupled to the portable remote communication unit (20) and operable to produce an alert signal in response to the portable remote communication unit (20) receiving the message; and an auxiliary receiver (40) operable to receive the alert signal over a second radio frequency communication channel (32) and produce an alarm to a user of the portable communication unit in response to the alert signal.



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## REMOTE ALERTING DEVICE FOR INCOMING RADIO COMMUNICATIONS

BACKGROUND OF THE INVENTION1. Field of the Invention

5 The present invention relates to a device  
for providing an alarm to a user of a portable  
communication unit indicating that the portable  
communication unit is receiving a message from a base  
communication unit and, more particularly, to a system  
10 employing an auxiliary transmitter with the portable  
communication unit to provide a signal to an auxiliary  
receiver on the user's person.

2. Related Art

15 Communication systems in general and  
cellular telephones and paging systems in particular  
have attained widespread use in providing users with  
the ability to receive messages irrespective of  
whether the user moves from place to place. Indeed,  
the portability of the cellular telephone or pager is  
precisely the function which places those devices in  
20 demand.

These communication systems, such as  
cellular telephone systems, typically employ a base  
station and a plurality of cellular (or mobile)  
stations which are portable. The portable stations  
25 typically employ a sounding device which activates  
when the portable station receives a message from the  
base station. When the sounder activates, the user is  
notified that a message is incoming and can then  
activate the portable station and receive the message.

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As portable cellular telephones and pagers have become very small and compact, some users place them in bags, purses, knapsacks, briefcases, or the like and cannot hear the sounding device when a message is incoming. Consequently, the user fails to receive the message. This is a significant problem because the primary function of the portable station is rendered useless. This problem is exacerbated when the portable stations are used in high ambient noise areas. Some portable station manufacturers have included luminous and/or tactile alerting devices with the portable station in order to increase the probability that a user will be alerted that a message is incoming. When the user places the portable station in a bag, however, even the luminous and tactile devices are rendered useless.

Accordingly, there is a need in the art for a new communication system in which the user may be notified that a message is incoming to his or her portable station irrespective of whether the portable station is placed in a bag or is otherwise out of earshot, site, or physical contact with the user.

#### SUMMARY OF THE INVENTION

In order to overcome the disadvantages of the prior art the present invention includes a base communication unit; a portable communication unit operable to receive a message from the base communication unit via a first radio frequency communication channel; an auxiliary transmitter coupled to the portable communication unit and operable to produce an alert signal in response to the portable communication unit receiving the message; and an auxiliary receiver operable to receive the

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alert signal over a second radio frequency communication channel and produce an alarm to a user of the portable communication unit in response to the alert signal.

5           According to another aspect of the instant invention, a communication device is provided which includes a base communication unit; a portable communication unit operable to receive a message from the base communication unit via a first radio  
10 frequency communication channel, the portable communication unit producing at least one of an audible signal, a luminous signal, and a tactile signal in response to receiving the message; a sensor unit operable to sense the at least one audible,  
15 luminous, and tactile signals to produce a first alert signal in response thereto; an auxiliary transmitter coupled to the sensor unit and operable to produce a second alert signal in response to the first alert signal; and an auxiliary receiver operable to receive  
20 the second alert signal over a second radio frequency communication channel and produce an alarm to a user of the portable communication unit in response to the second alert signal.

25           According to yet another aspect of the instant invention, a communication device is provided which includes a base communication unit; a portable communication unit operable to receive a message from the base communication unit via a radio frequency communication channel; and an auxiliary receiver  
30 operable to receive the message from the base communication unit over the radio frequency communication channel and produce an alarm to a user of the portable communication unit in response to the message.

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Other features, objects and advantages will become apparent to one skilled in the art from the teachings herein.

#### BRIEF DESCRIPTION OF THE DRAWINGS

5 For the purpose of illustrating the invention, there are shown in the drawing forms which are presently preferred, it being understood, however, that the invention is not limited to the precise arrangements and instrumentalities shown.

10 Fig. 1 is a block diagram showing a system according to one aspect of the present invention;

Fig. 2 is a block diagram showing a system according to another aspect of the present invention; and

15 Fig. 3 is a block diagram showing a system according to yet another aspect of the present invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings wherein like  
20 numerals indicate like elements, there is shown in Fig. 1 a block diagram illustrating a communication system according to one aspect of the present invention. The system includes a base communication unit 10, a remote communication unit 20, an auxiliary  
25 transmitter 30 coupled with the remote communication unit 20, and an auxiliary receiver 40. The communication system may be a cellular telephone system, a pager system, or the like, where the invention is not limited by the particular type of  
30 communication system in use.

By way of example, when the communication system is a cellular telephone system, the base

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communication unit 10 transmits and receives electromagnetic signals to and from the remote communication unit 20 over a radio frequency (RF) communications channel 12 (preferably a digital channel). When the base communication unit 10 has a message for transmission to the remote communication unit 20, the base communication unit 10 transmits a "wake up" signal over the communication channel 12 to the remote communication unit 20 indicating that the remote communication unit 20 should be placed in an active mode such that the message may be received and two-way communication between the base communication unit 10 and the remote communication unit 20 may be achieved.

It is preferred that the auxiliary transmitter 30 be integrated with the remote communication unit 20 such that the auxiliary transmitter may be activated and produce an alert signal in response to the remote communication unit 20 receiving the wake up signal from the base communication unit 10. Typically, the base communication unit 10 will transmit the wake up signal over the communication channel 12 to cause the remote communication unit 20 to ring, vibrate, or provide illumination such that a user of the remote communication unit 20 may be alerted to the fact that the base communication unit 10 is signalling the remote communication unit 20. It is preferred that the auxiliary transmitter 30 be adapted to respond to the circuitry of the remote communication unit 20 which processes the wake up signal received from the base communication unit 10.

The auxiliary transmitter 30 preferably produces an alert signal in response to the wake up

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signal from the base communication unit 10 and transmits the alert signal to the auxiliary receiver 40 over wireless communication channel 32. In response, the auxiliary receiver 40 preferably produces an alarm perceivable by the user which indicates that the remote communication unit 20 has received a wake up signal from the base communication unit 10. Consequently, irrespective of where the user has placed the remote communication unit 20, the user is notified that the remote communication unit 20 has received a wake up signal from the base communication unit 10.

Preferably, the auxiliary receiver 40 includes an audible alarm unit, a luminous alarm unit, and/or a tactile alarm unit to produce the alarm to the user. When the auxiliary receiver 40 includes an audible alarm unit, it is preferred that the unit provide a beep and/or buzz sound in response to the alert signal received from the auxiliary transmitter 30. When the auxiliary receiver 40 employs a luminous alarm unit, it is preferred that the unit provide a flashing and/or continuous light alarm to the user in response to the alert signal from the auxiliary transmitter 30. When the auxiliary receiver 40 employs a tactile alarm unit, it is preferred that the unit provide a vibration alarm to the user in response to the alert signal received from the auxiliary transmitter 30.

The auxiliary receiver 40 is preferably sized and shaped such that it may be located on the user's person in a convenient location to provide the user with the alarm while not detracting from the user's appearance. It is most preferred that the auxiliary receiver 40 be substantially small and



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compact such that it may not be seen or may be integrated with other personal items worn by the user.

For example, the auxiliary receiver 40 may be integrated with a piece of jewelry and/or an article of clothing of the user. The auxiliary receiver 40 is preferably integrated with a ring, broach, necklace, bracelet, earring, pin, watch, tie clip, or the like. The auxiliary receiver 40 may also be integrated with a hat, scarf, button, belt, bra, shoe, or the like. The invention is not limited by the user accessory with which the auxiliary receiver 40 is integrated.

It is noted that the remote communication unit 20 provides a plurality of functions to a user, such as two-way communication via telephone, status information (for example, signal strength information), telephone number memory functions, or the like. It is preferred that the auxiliary receiver 40 provide substantially fewer functions than the remote communication unit 20, and preferably provides only the function of producing the alarm in response to the alert signal from the auxiliary transmitter 30.

Reference is now made to Fig. 2 which shows a block diagram of a communication system according to another aspect of the present invention. By way of background, those skilled in the art will recognize that a substantial number of remote communication units 20 are currently in existence which do not enjoy that advantages of the present invention. As it is desirable to modify these remote communication units 20 to include the auxiliary transmitter 30, the present invention preferably provides a retrofit capability which enables existing remote communication

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units 20 to add an auxiliary transmitter 30 after manufacture.

When an auxiliary transmitter 30 is to be added to a remote communication unit 20 after manufacture, it is desirable that the auxiliary transmitter 30 be coupled to the remote communication unit 20 without using hard wire electrical connections. This is so because to require such hard wire connections would result in complex and costly retrofit operations and render the use of the auxiliary transmitter 30 undesirable.

In order to achieve ease in retrofit operations, the present invention includes a sensor unit 30a coupled to the auxiliary transmitter 30 to the remote communication unit 20 without the need of hard wire electrical connections. The sensor unit 30a includes one or more sensor devices sensitive to the audible, luminous or tactile alerting devices of the remote communication unit 20. In particular, when the remote communication unit 20 employs an audible alerting device (such as a telephone ringer), sensor unit 30a employs an audible sensing device (such as a microphone) to sense when the remote communication unit 20 is ringing. The sensor unit 30a preferably produces an alert signal in response to the sensed audible alert emanating from the remote communication unit 20 and provides the alert signal to the auxiliary transmitter 30. The auxiliary transmitter 30 then produces its own alert signal in response to the alert signal from the sensor unit 30a and transmits that signal over the wireless communication channel 32 to the auxiliary receiver 40 so that the user may be provided with an alarm therefrom.

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It is evident from the above teaching that the sensor unit 30a may be integrally coupled with the auxiliary transmitter 30 but that no hard wire electrical connection need be made between the remote communication unit 20 and either the sensor 30a or auxiliary transmitter 30.

When the remote communication unit 20 employs a luminous alarm device or tactile alerting device, it is preferred that the sensor unit 30a include an appropriate sensing device, such as a light sensitive semiconductor device to sense the illumination from the remote communication unit 20 or a vibration sensing device, such as an accelerometer, to produce an alert signal when the remote communication unit 20 receives a wake up signal from the base communication unit 10.

Reference is now made to Fig. 3 which shows a block diagram of a communication system according to another aspect of the present invention. As was the case in previous embodiments, the communication system includes a base communication unit 10 and a remote communication unit 20 which are linked via communication channel 12. Unlike previous embodiments, however, the system of Fig. 3 includes an auxiliary receiver 50 capable of receiving a wake up signal directly from the base communication unit 10 over wireless communication channel 12.

Those skilled in the art will recognize that the remote communication unit 20 is typically provided with an identification code which is registered with the base communication unit 10 such that the base communication unit 10 may provide the wake up signal over communication channel 12 only to the corresponding remote communication unit 20 (not other

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unrelated remote communication units 20). In accordance with the invention, the auxiliary receiver 50 is provided with the capability of being programmed with the same or similar identification code as the  
5 corresponding remote communication unit 20 such that the auxiliary receiver 50 receives the wake up signal over channel 12 when the remote communication unit 20 receives the wake up signal. This is accomplished, for example, by providing the auxiliary receiver 50  
10 with a programming system 50a (including, for example, an EEPROM) which contains the identification code.

The auxiliary receiver 50 is preferably sized and shaped such that it may be located on the user's person in a convenient location to provide the  
15 user with the alarm while not detracting from the user's appearance. It is most preferred that the auxiliary receiver 50 be substantially small and compact such that it may not be seen or may be integrated with other personal items worn by the user.

20 For example, the auxiliary receiver 50 may be integrated with a piece of jewelry and/or an article of clothing which is worn by the user. It is preferred that the auxiliary receiver 50 be integrated with a ring, broach, necklace, bracelet, earring, pin,  
25 watch, tie clip, or the like. Alternatively, the auxiliary receiver 40 may be preferably integrated with a hat, scarf, button, belt, bra, shoe, etc.

It is preferred that the auxiliary receiver 50 provide substantially fewer functions than the  
30 remote communication unit 20, and preferably provides only the function of producing the alarm in response to the wake up signal from the base communication unit 10.

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The user of a remote communication unit 20 according to this aspect of the present invention receives an indication that the remote communication unit 20 is receiving a wake up signal from the base communication unit 10 irrespective of where the remote communication unit 20 is located.

The foregoing description of the preferred embodiments of the present invention have been provided for the purposes of illustration and description. They are not intended to be exhaustive or to limit the invention to the precise forms disclosed. Many modifications and variations are possible in light of the above teaching. It is intended that the scope of the invention be limited not by this detailed description, but rather by the claims appended hereto.

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WHAT IS CLAIMED IS:

1. A communication device, comprising:  
a base communication unit;  
5 a portable communication unit operable to  
receive a message from the base communication unit via  
a first radio frequency communication channel;  
an auxiliary transmitter coupled to the  
portable communication unit and operable to produce an  
10 alert signal in response to the portable communication  
unit receiving the message; and  
an auxiliary receiver operable to receive  
the alert signal over a second radio frequency  
communication channel and produce an alarm to a user  
15 of the portable communication unit in response to the  
alert signal.

2. The communication device of claim 1,  
wherein the auxiliary receiver is integrated with at  
least one of a piece of jewelry and an article of  
clothing to be worn by the user.

3. The communication device of claim 2,  
wherein:  
the jewelry is taken from the group  
consisting of a ring, a broach, a necklace, a  
5 bracelet, an earring, a pin, a watch, and a tie clip;  
and  
the clothing is taken from the group  
consisting of a hat, a scarf, a button, a belt, a bra,  
and a shoe.

4. The communication device of claim 1,  
wherein:

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the auxiliary receiver is operable to  
produce at least one of an audible alarm, a luminous  
5 alarm, and a tactile alarm to the user in response to  
the alert signal; and

the audible alarm is one of a beep sound and  
buzz sound, the luminous alarm is one of a flashing  
light and a continuous light, and the tactile alarm is  
10 a vibration.

5. The communication device of claim 1,  
wherein the portable communication unit is taken from  
the group consisting of cellular telephones and  
personal pagers.

6. A communication device, comprising:  
a base communication unit;  
a portable communication unit operable to  
receive a message from the base communication unit via  
5 a first radio frequency communication channel, the  
portable communication unit producing at least one of  
an audible signal, a luminous signal, and a tactile  
signal in response to receiving the message;

a sensor unit operable to sense the at least  
10 one audible, luminous, and tactile signals to produce  
a first alert signal in response thereto;

an auxiliary transmitter coupled to the  
sensor unit and operable to produce a second alert  
signal in response to the first alert signal; and

15 an auxiliary receiver operable to receive  
the second alert signal over a second radio frequency  
communication channel and produce an alarm to a user  
of the portable communication unit in response to the  
second alert signal.

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7. The communication device of claim 6, wherein the auxiliary receiver is integrated with at least one of a piece of jewelry and an article of clothing to be worn by the user.

8. The communication device of claim 7, wherein:

the jewelry is taken from the group consisting of a ring, a broach, a necklace, a bracelet, an earring, a pin, a watch, and a tie clip;  
5 and

the clothing is taken from the group consisting of a hat, a scarf, a button, a belt, a bra, and a shoe.

9. The communication device of claim 6, wherein:

the auxiliary receiver is operable to produce at least one of an audible alarm, a luminous alarm, and a tactile alarm to the user in response to  
5 the second alert signal; and

the audible alarm is one of a beep sound and buzz sound, the luminous alarm is one of a flashing light and a continuous light, and the tactile alarm is  
10 a vibration.

10. The communication device of claim 6, wherein the portable communication unit is taken from the group consisting of cellular telephones and personal pagers.

11. A communication device, comprising:  
a base communication unit;



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a portable communication unit operable to receive a message from the base communication unit via a radio frequency communication channel; and

an auxiliary receiver operable to receive the message from the base communication unit over the radio frequency communication channel and produce an alarm to a user of the portable communication unit in response to the message.

12. The communication device of claim 11, wherein the auxiliary receiver is integrated with at least one of a piece of jewelry and an article of clothing to be worn by the user.

13. The communication device of claim 12, wherein:

the jewelry is taken from the group consisting of a ring, a broach, a necklace, a bracelet, an earring, a pin, a watch, and a tie clip; and

the clothing is taken from the group consisting of a hat, a scarf, a button, a belt, a bra, and a shoe.

14. The communication device of claim 11, wherein:

the auxiliary receiver is operable to produce at least one of an audible alarm, a luminous alarm, and a tactile alarm to the user in response to the message; and

the audible alarm is one of a beep sound and buzz sound, the luminous alarm is one of a flashing light and a continuous light, and the tactile alarm is a vibration.

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15. The communication device of claim 11, wherein the portable communication unit is taken from the group consisting of cellular telephones and personal pagers.

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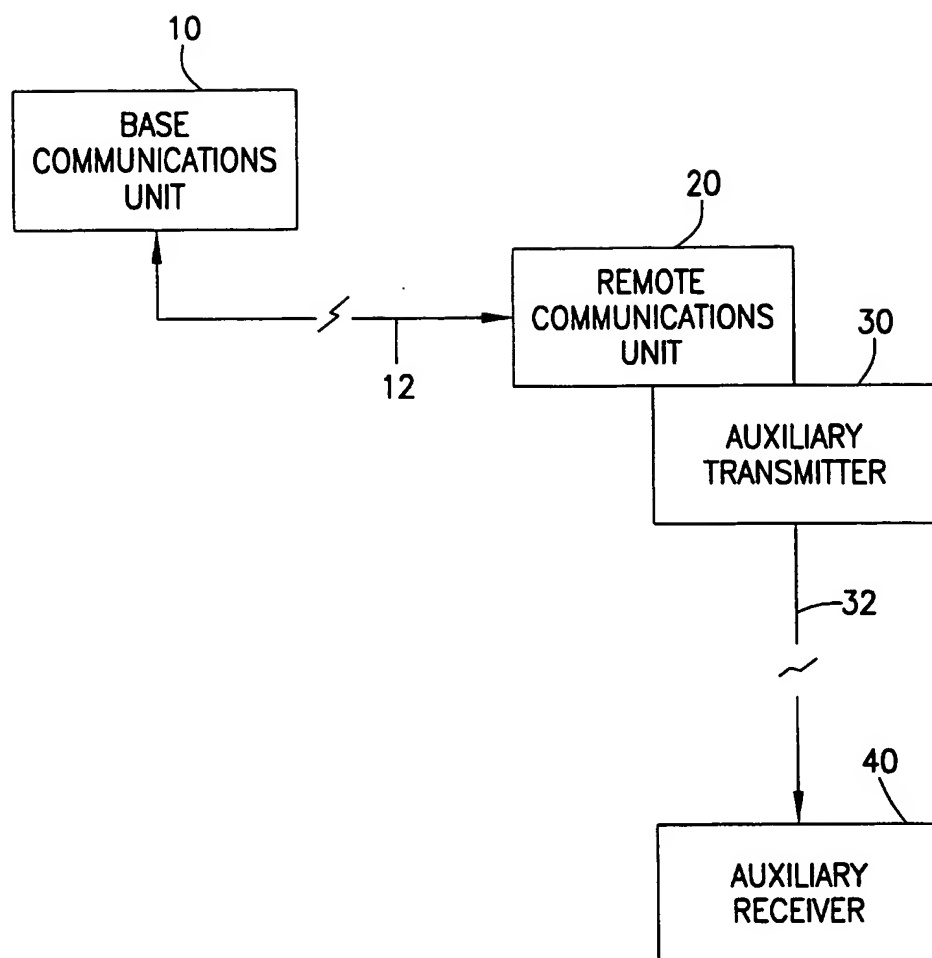


Fig. 1

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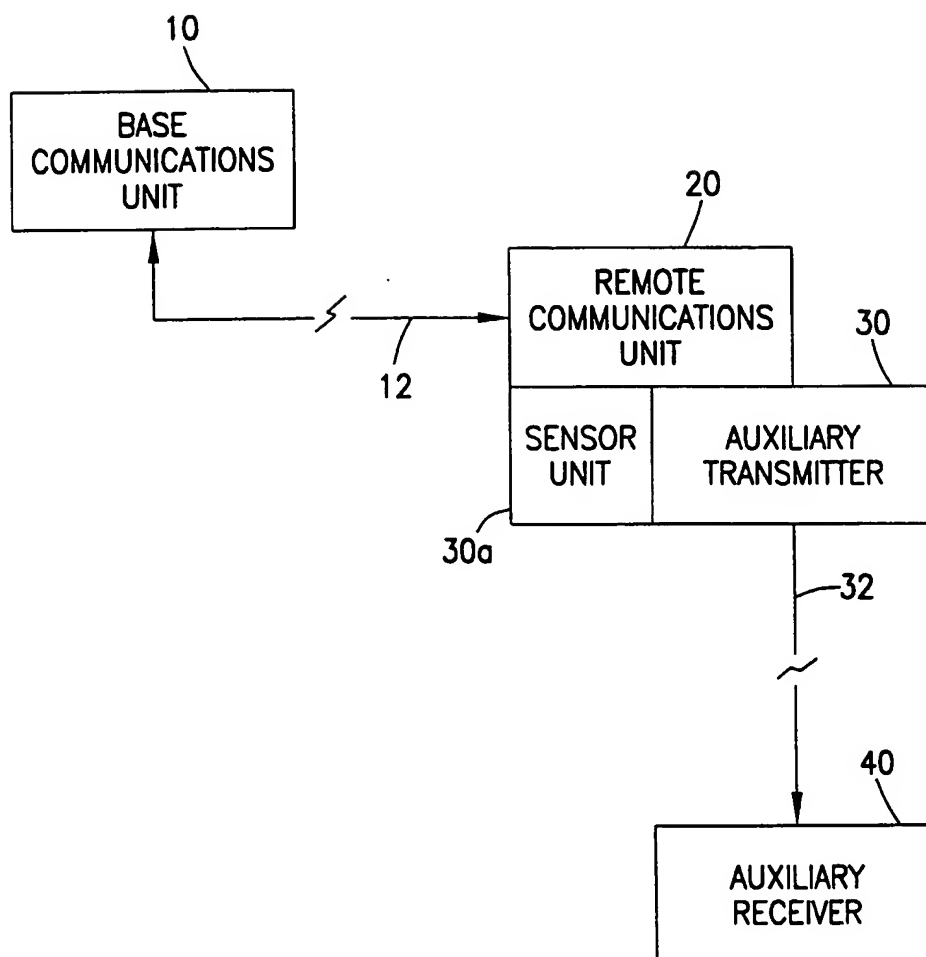


Fig. 2

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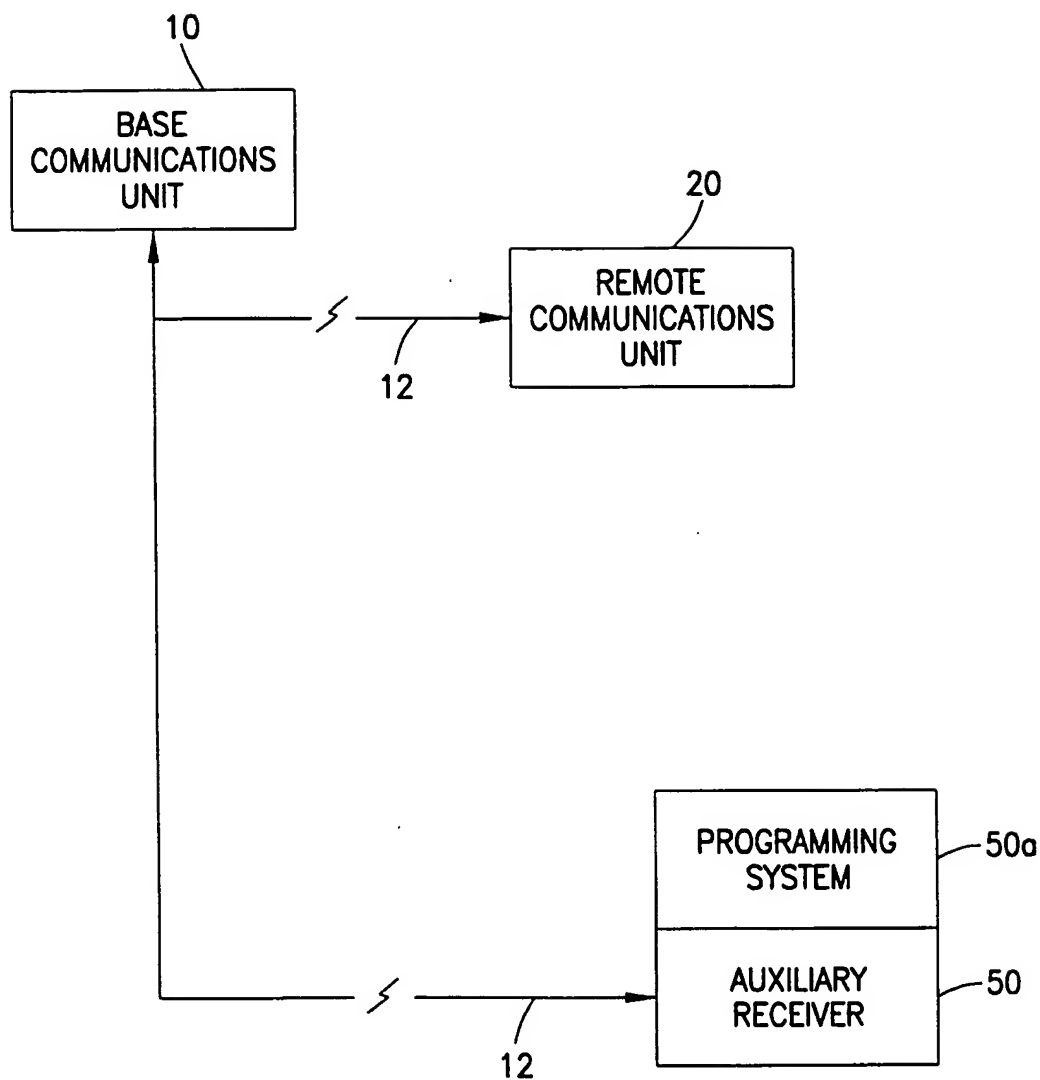


Fig. 3